Analysis for Natural Gas and Similar Gaseous Mixtures by Gas Chromatography

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FOREWARD

GPA 2261 provides the gas processing industry a method for determining the chemical composition of natural gas and similar gaseous mixtures using a Gas Chromatograph (GC).

The precision statements contained in this standard are based on the statistical analysis of round-robin laboratory data obtained by the GPA Midstream Analysis, Test Methods and Product Specifications Committee (Analysis Committee).

This standard was developed by the cooperative efforts of many individuals from industry under the sponsorship of GPA Midstream Analysis Committee.

Throughout this publication, the latest appropriate GPA Standards are referenced.

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1. SCOPE

1.1 This standard covers the determination of the chemical composition of natural gas and similar gaseous mixtures within the ranges listed in Table 1, using a Gas Chromatograph (GC). The three columns represent the original Table 1, but separate the values to three distinct groups. The first group is concentrations lower than the data obtained from the round-robin project (RR-188). The second group is concentrations used in the round-robin project (RR-188). The equations listed in the precision statement in this standard cover the range listed in the middle column, after outliers were removed. The third group is concentrations higher than the data obtained from the round-robin project (RR-188).

The precision statement in this standard utilizes equations derived from a regression of the data in RR-188 and is detailed in GPA TP-31. The precision statement criterion applies only to values listed in Section 10, Table 6.

1.2 Components sometimes associated with natural gases, i.e., helium, hydrogen sulfide, water, carbon monoxide, hydrogen and other compounds are excluded from the main body of the method. These components may be determined and made a part of the complete compositional data. Refer to Appendix C.

Table 1 – Ranges of Natural Gas Components Covered

Component	Lower Region	Round Robin	Higher Region
Nitrogen	0.01 - 0.1	0.1 - 30	> 30
Methane	0.01 - 40	40 - 100	N/A
Carbon Dioxide	0.01 – 0.1	0.1 - 30	> 30
Ethane	0.01 - 0.1	0.1 - 10	> 10
Propane	0.01 - 0.1	0.1 - 10	> 10
Isobutane	0.01 - 0.25	0.25 - 4	> 4
n-Butane	0.01 - 0.25	0.25 - 4	> 4
Isopentane	0.01 - 0.12	0.12 - 1.5	> 1.5
n-Pentane	0.01 - 0.12	0.12 - 1.5	> 1.5
*Hexanes Plus	0.01 - 0.1	0.1 - 1.5	> 1.5
*Heptanes Plus	0.01 - 0.1	0.1 - 1.5	> 1.5

**Data from round –robin was only obtained for Hexanes Plus*

Table Note 1 - Uncertainty in the Lower region can easily be ten times greater and in the higher region two to three times greater than the center column.

NOTE 1 - Components not listed in Table 1 may be determined by procedures outlined in Appendix C or other applicable analytical procedures. Refer to Appendix C.